CLAIMS

What is claimed is:

1. A switching module comprising:

a first gateway network element to terminate a synchronous data transmission ring;

a second gateway network element to terminate an additional synchronous data transmission ring;

a central switching core to directly interconnect the first and second gateway network elements; and

a management element to interconnect the first and second gateway network elements with a central management system.

2. A switching module according to claim 1, wherein the first and second gateway network elements comprise network elements manufactured by different vendors.

3. A switching module according to claim 1, wherein the gateway network elements terminating a synchronous data transmission ring comprises the gateway network elements terminating a Synchronous Digital Hierarchy (SDH) ring.

4. A switching module according to claim 1, wherein the gateway network elements terminating a synchronous data transmission ring comprises the gateway network elements terminating a Synchronous Optical Network (SONET) ring.

5. A switching module according to claim 1, wherein the central switching core includes a packet-based switching fabric overlaid with a synchronous frame structure.

6. A switching module according to claim 5, wherein the central switching core comprises a switching platform to switch a traffic stream tributary across the one and the additional synchronous data transmission rings.

7. A switching module according to claim 5, wherein the first gateway network element comprises a Protocol Data Unit (PDU) traffic stream termination card and the second gateway network element comprises a Time-Division Multiplex (TDM) traffic stream termination card, and the central switching core switches both streams.

8. A switching module according to claim 1, wherein the management element interconnects the first and the second gateway network elements to the central management system, at least one of the first and the second gateway network elements employing a management communication channel that is incompatible with the central management system.

9. A switching module according to claim 8, wherein the first gateway network element employs an Internet Protocol (IP) stack and the second gateway network element employs an Open System Interconnection (OSI) stack.

10. A switching module according to claim 8, wherein the first and second gateway network elements employ an OSI stack, where the applications of the OSI stacks between the first and second gateway network elements are incompatible.

11. A switching module according to claim 1, further comprising an interface to interconnect with the central switching core to locally drop traffic from a tributary on a synchronous data transmission ring terminated on the first gateway network element.

12. A method in a switching module, comprising:

terminating multiple synchronous data transmission ring on associated gateway network elements;

directly interconnecting the gateway network element through a central switching core; and

interconnecting the gateway network elements to a central management system with a local management element.

**13.** A method according to claim 12, wherein terminating the synchronous data transmission rings comprises terminating the synchronous transmission rings with network elements manufactured by different vendors.

**14.** A method according to claim 12, wherein terminating the synchronous data transmission rings comprises terminating a Synchronous Digital Hierarchy (SDH) ring.

**15.** A method according to claim 12, wherein terminating the synchronous data transmission rings comprises terminating a Synchronous Optical Network (SONET) ring.

**16.** A method according to claim 12, wherein directly interconnecting the gateway network elements comprises switching traffic from a ring associated with a first network element directly onto a ring associated with a second network element via a packet-based switching fabric overlaid with a synchronous frame structure.

**17.** A method according to claim 16, wherein switching directly interconnecting the gateway network elements via the packet-based switching fabric comprises switching traffic from the ring associated with the first network element onto rings associated with other network elements.

**18.** A method according to claim 12, wherein interconnecting the gateway network elements with the local management element comprises interconnecting one or more network elements that employ a management communication channel that is incompatible with the central management system.

**19.** A method according to claim 18, wherein interconnecting the one or more network elements that employ the incompatible management communication channel comprises interconnecting a network element that employs an Internet Protocol (IP) stack with the central

management system that supports an Open System Interconnection (OSI) stack and not the IP stack.

**20.** A method according to claim 18, wherein interconnecting the one or more network elements that employ the incompatible management communication channel comprises interconnecting a network element that employs a different, incompatible application of the OSI stack than an application of the OSI stack supported by the central management system.

**21.** A method according to claim 12, further comprising dropping to a local interface traffic from a tributary on one of the multiple synchronous data transmission rings.

**22.** An integrated switch comprising:

a central switching core to directly interconnect a synchronous data transmission ring terminated on a first gateway network element with an additional synchronous data transmission ring terminated on a second gateway network element; and

a local management element to interconnect the integrated switch with a central management system.

**23.** An integrated switch according to claim 22, wherein the central switching core interconnects synchronous data transmission rings terminated on gateway network elements manufactured by different vendors.

**24.** An integrated switch according to claim 22, wherein the central switching core comprises a switching platform to switch a traffic stream tributary from a first synchronous data transmission ring across multiple other synchronous data transmission rings.

**25.** An integrated switch according to claim 24, wherein the central switching core switches Protocol Data Unit (PDU) traffic and Time Division Multiplex (TDM) traffic across multiple rings via a single switching fabric.

**26.** An integrated switch according to claim 22, wherein the management element is adapted to interconnect with gateway network elements employing mutually incompatible management communication channels.

**27.** An integrated switch according to claim 26, wherein the mutually incompatible management channels include Internet Protocol (IP) over Data Communication Channel (DCC) and Open System Interconnection (OSI) over DCC.

**28.** An integrated switch according to claim 26, wherein the mutually incompatible management channels include incompatible applications of OSI over DCC.

**29.** An integrated switch according to claim 22, further comprising an interface to interconnect with the central switching core to locally drop traffic from a tributary on the synchronous data transmission ring terminated on the first gateway network element.

**30.** A method for operating an integrated switch, comprising:

directly interconnecting a synchronous data transmission ring terminated on a first gateway network element to an additional synchronous data transmission ring terminated on a second gateway network element; and

maintaining a gateway management communication channel between a central management system and the first and second gateway network elements.

**31.** A method according to claim 30, wherein directly interconnecting the synchronous data transmission rings comprises interconnecting synchronous data transmission rings terminated on gateway network elements manufactured by different vendors.

**32.** A method according to claim 30, wherein directly interconnecting the synchronous data transmission rings comprises switching a traffic stream tributary across the first and the second synchronous data transmission rings.

**33.** A method according to claim 30, wherein maintaining the gateway management communication channel comprises natively supporting multiple incompatible management communication channels.

**34.** A method according to claim 33, wherein natively supporting the multiple incompatible management channels includes supporting Internet Protocol (IP) over Data Communication Channel (DCC) and Open System Interconnection (OSI) over DCC.

**35.** A method according to claim 33, wherein natively supporting the multiple incompatible management channels includes supporting incompatible applications of OSI over DCC.

**36.** A method according to claim 30, further comprising dropping to a local interface traffic from the tributary on the synchronous data transmission ring terminated on the first gateway network element.